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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/049,641 | 02/25/2002 | Thomas Jaworek | 218789USOPCT | 1925 |
| 22850 | 7590 | 05/15/2003 | | 9 |
| OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314 | | | EXAMINER | |
| | | | TSOY, ELENA | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1762 | |

DATE MAILED: 05/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) |
|------------------------------|------------------------|------------------|
| | 10/049,641 | JAWOREK ET AL. |
| | Examiner Elena Tsoy | Art Unit 1762 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 25 February 2002 .

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-17 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-17 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. ____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____ .
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 8 . 6) Other: _____

Specification

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact disc.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. **Claims 1-9, 11-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Howard (US 4,133,723).

As to claims 1-3, 6-9, 11, 12, 14, Howard discloses a process for producing a mar-resistant coating (See column 12, lines 37-38), said process comprising applying to a substrate (See column 3, lines 65-66) such as aluminum (See column 15, lines 16-17) UV-curable coating composition (See column 11, lines 31-32) comprising a mixture of (i) 35-90 wt % (See column 7, lines 36-40; column 12, lines 23-24) unsaturated urethane oligomer having at least two double bonds per molecule (See column 4, lines 37-42; column 12, lines 15-18), said urethane oligomer obtained by successive reaction of at least one organic isocyanate compound having at least two isocyanate groups (component A) with at least one poly(alkylene oxide) polyol, and at least one unsaturated addition-polymerizable monomeric compound having a single isocyanate-reactive active hydrogen group (See column 3, lines 41-49; column 6, lines 35-45) such as 2-hydroxyethyl methacrylate, 2-hydroxypropyl methacrylate (component B), (ii) 10-65 wt % of at least one reactive monomer diluent (See column 3, lines 49-50; column 7, lines 36-40) such as polyfunctional esters of acrylic acid with polyols (See column 7, lines 57-69), (iii) 1.0 wt % of photoinitiator (See column 11, Table II); and (iv) optionally a chain transfer agent (See column 7, lines 15-16) such as glycol mercaptoacetate (a molecule containing isocyanate-reactive group and hydrophilic stabilizing group) (component C) (See column 10, lines 9-58) in an amount of 0.1-5 parts per 100 parts of combined weight of the component A and component B (i.e. at least 25 wt% of isocyanate groups of the component A react with the component B) to form a wet film

(See column 13, line 56) and curing said coating by exposure to UV radiation under inert gas atmosphere (See column 2, lines 10-14; column 13, lines 24-27, 62-63). The component A is obtained by reacting low molecular mass aliphatic diisocyanate (See column 4, lines 54, 64-65) with polyol (See column 3, lines 35-38; column 4, lines 15-24), there being an excess of isocyanate compound with respect to hydroxyl groups of said polyol (See column 4, lines 25-28). The component B has a single isocyanate-reactive active hydrogen group being present in an amount sufficient to provide at least one molar equivalent of active hydrogen group with respect to isocyanate reactivity so that to achieve the urethane oligomer with no free isocyanate functionality (See column 4, lines 28-33; column 6, lines 35-45). The coating composition further comprises additives such as pigments, fillers at well known concentrations (See column 11, lines 5-14).

The Examiner Note: unsaturated urethane oligomer is aliphatic urethane methacrylate prepolymer of claimed invention because it is prepared by reacting the same components A B, and C (See specification, page 4, lines 5-47; page 5, lines 1-6).

Howard fails to teach that the urethane oligomer has: (a) a viscosity in the range of 250-11,000 mPa·s (Claim 1), (b) number-average molecular weight of 500-5000 (Claim 4), a double bond equivalent weight of 250-2000 (Claim 5) or 300-900 (Claim 16); the coating composition comprises additives 2-9 wt % (Claim 15); 2-40 wt % pigments (Claim 11); 1-30 wt % fillers (Claim 12).

As to claims 1, 4, 5, 11, 12, 15, 16, Howard further teaches that control over the properties of the cured systems can be exercised via the structure of the oligomer backbone, including such factors as degree of chain-branching, types of functional groups, number and

types of unsaturated bonds, molecular weight (consequently viscosity), etc.; functionality and level of crosslinking agents; nature and level of reactive diluent; kind and level of the sensitizer or photoinitiator; and the like (See column 1, lines 52-59). In other words, limitations of claims 1, 4, 5, 11, 12, 15, 16 are result-effective parameters in a coating process.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant result-effective parameters (including those of claims 1, 4, 5, 11, 12, 15, 16) in a process of Howard through routine experimentation in the absence of a showing of criticality.

As to claims 13, 17, Howard fails to teach that a coating composition having optionally pigments (See column 11, lines 5-6) is applied to a substrate twice with drying a first coating before applying a second coating, and then curing the final coating.

However, it is a known principle to reapply a coating composition to achieve a desired thickness of a final coating depending on intended use of a final product. Clearly, the applied thin layer of a first coating would be drying in the air or inert atmosphere until a second layer is applied.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have made reapplied a coating composition in a process of Howard, according to well known principle, with the expectation of providing the desired thickness of final coating depending on intended use of a final product, in the absence of a showing of criticality.

3. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Howard (US 4,133,723) in view of Moran, Jr. (US 4,439,600).

Howard, as applied above, fails to teach that the urethane methacrylate oligomer of the UV-curable coating composition is prepared by reacting at least a portion of the free isocyanate groups of the urethane methacrylate oligomer with hydroxyalkyl esters of aliphatic dicarboxylic acids having at least 6 carbon atoms.

Moran, Jr. teaches that UV-curable coating composition comprising urethane methacrylate prepolymer (See column 6, lines 63-67), reactive diluent (See column 6, lines 55-59) and photoinitiator (See column 10, lines 47-50) can be provided with elastomeric properties and appropriate tensile strength after curing (See Abstract), if urethane methacrylate prepolymer is prepared by reacting a polyisocyanate compound with a suitable hydroxyacrylate or methacrylate and then reacting the resulting product with a suitable glycol polyester (See column 6, lines 63-66), which is derived from glycol of at least two carbon atoms with a dicarboxylic acid of more than three carbon atoms such as neopentyl glycol and 1,6 hexanediol with adipic acid (See column 4, lines 35-42). In other words, secondary reference of Moran, Jr. is relied upon to show that urethane methacrylate prepolymer comprising units of glycol polyester of dicarboxylic acids provides the UV-curable coating composition with elastomeric properties and appropriate tensile strength after curing.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified urethane methacrylate prepolymer in UV-curable coating composition of Howard by reacting a polyisocyanate compound with a suitable hydroxyacrylate or methacrylate and then reacting the resulting product with a suitable glycol polyester, which is

derived from glycol of at least two carbon atoms with a dicarboxylic acid of more than three carbon atoms, with the expectation of providing the coating composition with the desired increase of flexibility after curing, as taught by Moran, Jr., depending on intended use of a final product.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Elena Tsoy

Elena Tsoy
Examiner
Art Unit 1762

May 14, 2003